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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/606,252

06/28/2000

Raminda U. Madurawe

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12/11/2002

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EXAMINER

BROCK II, PAUL E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 12/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/606,252

Applicant(s)

MADURAWA ET AL.

Examiner

Paul E Brock II

Art Unit

2815

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-38,40 and 42-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-38,40 and 42-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 14.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the enhancement implant and the pocket implants in the same embodiment must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 27, 29 – 31, 33 – 36, 38 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Yuki et al. (USPAT 5466957, Yuki).

With regard to claim 27, Yuki discloses in figure 3a – 3d a method of fabricating a transistor in an integrated circuit device. Yuki discloses in figure 3a – 3d providing a semiconductor substrate (21), forming a gate oxide (23) on the semiconductor substrate and forming a gate (24) on the gate oxide. Yuki discloses in figure 3a – 3d implanting (22) a first pocket implant (right side 21a) into the semiconductor substrate from a first side of the gate. Yuki discloses in figure 3a – 3d implanting a second pocket implant (left side 21a) into the semiconductor substrate from a second side of the gate. Yuki discloses in figure 3a – 3d wherein the first pocket implant and the second pocket implant are in contact at about the center of a channel region.

With regard to claim 29, Yuki discloses in figure 3a – 3d the first pocket implant and the second pocket implant are implanted at an angle.

With regard to claim 30, Yuki discloses in figure 3a – 3d the first pocket implant and the second pocket implant are implanted using the gate as a mask.

With regard to claim 33, Yuki discloses in figure 3a – 3d; column 5, lines 51 – 67; and column 6, lines 1 – 11 forming a source on the first side of the gate and a drain on the second side of the gate, wherein the source and drain are doped at a first polarity and the first pocket implant and the second pocket implant are doped at a second polarity.

With regard to claim 34, Yuki discloses in figure 3a – 3d; column 5, lines 51 – 67; and column 6, lines 1 – 11 that the first polarity is different than the second polarity.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuki as applied to claims 27 above, and further in view of Sanchez (USPAT 5583067).

With regard to claim 28, Yuki discloses in column 5, lines 54 – 60 that the pocket implants are boron implants. Yuki is silent to the fact that the first pocket implant and the second pocket implant laterally diffuse in the semiconductor substrate. Sanchez teaches in column 7, lines 40 – 45 lateral diffusion of boron. It would have been obvious to one of ordinary skill in the art at the time of the present invention for the pocket implants of Yuki to diffuse laterally such as the implants of Sanchez because later process steps will facilitate the diffusion as stated by Sanchez in column 7, lines 40 – 45.

With regard to claim 31, it should be noted that “wherein the diffusing increases a reverse short channel effect of the transistor” is an intended use limitation that does not bear any patentable weight within the method claim. Therefore, Yuki and Sanchez read on the claimed invention.

5. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yuki as applied to claim 27 above, and further in view of Gilgen et al. (USPAT 5134085, Gilgen)

Yuki does not disclose implanting an enhancement implant. Gilgen et al. teaches in figure 8 and column 6, lines 56 – 62 implanting an enhancement implant in the semiconductor substrate. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the enhancement implant of Gilgen in the method of Yuki in order to adjust the threshold voltage of a device as stated by Gilgen in column 6, lines 56 – 62.

6. Claims 35, 36, 38, 40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kao et al. (USPAT 5492847, Kao) in view of Sanchez.

With regard to claim 35, Kao discloses in figure 2a – 2g a method of fabricating a transistor in an integrated circuit device. Kao discloses providing a semiconductor substrate (204), forming a gate oxide (206) on the semiconductor substrate and forming a gate (210) on the gate oxide in figure 2a. Kao discloses in figure 2c implanting a first pocket implant (222 and 214) and a second pocket implant (222 and 216) into the semiconductor substrate using the gate as a mask. Kao teaches that the pocket implants are boron implants. Kao is silent to the fact that the first pocket implant and the second pocket implant laterally diffuse in the semiconductor substrate. Sanchez teaches in column 7, lines 40 – 45 lateral diffusion of boron. It would have been obvious to one of ordinary skill in the art at the time of the present invention for the pocket implants of Kao to diffuse laterally such as the implants of Sanchez because later process steps will facilitate the diffusion as stated by Sanchez in column 7, lines 40 – 45. It is therefore obvious that Kao has diffusing of the first pocket implant and the second pocket implant laterally as shown in figures 4a and 4b the first pocket implant obviously merges with the second pocket implant due to the implant conditions of the original implants and the later processing.

With regard to claims 36 and 43, it should be noted that “wherein the diffusing increases a threshold voltage of the transistor” is an intended use limitation that does not bear any patentable weight within the method claim. Therefore, Kao and Sanchez read on the claimed invention.

Claims 38 and 40 are rejected similar to claim 35.

Claim 42 is rejected similar to claim 35. It should be noted that “wherein the diffusing increases a reverse short channel effect of the transistor” is an intended use limitation that does not bear any patentable weight within the method claim. Therefore, Kao and Sanchez read on the claimed invention.

7. Claim 37 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kao and Sanchez as applied to claims 35 and 42, respectively, above, and further in view of Gilgen.

Kao and Sanchez do not disclose implanting an enhancement implant. Gilgen teaches in figure 8 and column 6, lines 56 – 62 implanting an enhancement implant in the semiconductor substrate. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the enhancement implant of Gilgen in the method of Kao in order to adjust the threshold voltage of a device as stated by Gilgen in column 6, lines 56 – 62.

Response to Arguments

8. Applicant's arguments filed October 15, 2002 have been fully considered but they are not persuasive.

9. With regard to claim 35, the applicant argues that in Kao “these figures do not show two pocket implants, rather they show a single implant 432.” Even though Kao states in column 7, lines 6 – 9 “single APT pocket”, it is obvious the pocket implant area after the diffusion is being considered. This must be the case, because the only disclosure that Kao gives of forming the pocket implants are through angled implants. In this process two implanted regions are always formed on either side of the gate. In the case of figures 4a and 4b of Kao the one represented pocket region has to be the result of diffusion of the two separate pocket regions during and after the implantation. There is no other possibility that is consistent with the disclosure of Kao.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
December 6, 2002



EDDIE LEE
SUPERVISOR / EXAMINER
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